



**U.S. Department of the Interior
Office of Inspector General**

AUDIT REPORT

**SAFETY OF DAMS PROJECT
CONSTRUCTED BY THE
BUREAU OF RECLAMATION
AT COOLIDGE DAM**

**REPORT NO. 98-I-190
JANUARY 1998**



United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, D.C. 20240

JAN 12 1998

MEMORANDUM

TO: The Secretary

FROM: Robert J. Williams *Robert J. Williams*
Acting Inspector General

SUBJECT SUMMARY: Final Audit Report for Your Information - "Safety of Dams Project Constructed by the Bureau of Reclamation at Coolidge Dam" (No. 98-I-190)

Attached for your information is a copy of the subject final audit report. The objective of the audit was to determine whether the Bureau of Reclamation's costs of \$46.9 million associated with the construction of the Coolidge Dam safety of dams project were reasonable.

Overall, we concluded that the costs were reasonable. Specifically, we found that: (1) the overall increase in project costs was less than what would have been expected if the Bureau had constructed all of the modification work proposed in the 1988 modification report; (2) the percentage of noncontract costs for this project compared favorably with the rates of noncontract costs for five other safety of dams projects constructed by the Bureau; (3) the Bureau incurred noncontract costs of \$3.5 million for necessary activities that were not included or anticipated in the 1988 cost estimates; and (4) the increased percentage of noncontract costs was largely a result of post-1988 investigations by the Bureau, which significantly reduced the scope and cost of modification work performed under the construction contracts.

The report contained no recommendations. However, the Bureau of Indian Affairs, in responding to our request for comments on the report, expressed its concerns about certain costs incurred by the Bureau of Reclamation. Because we believe that these concerns are technical and legal issues, we suggested that the Bureau of Indian Affairs seek further clarification and justification from the Bureau of Reclamation about the nature of project costs and the efficiency of project operations and address questions about the eligibility of costs for funding under the Reclamation Safety of Dams Act Amendments of 1984 to the Office of the Solicitor.

If you have any questions concerning this matter, please contact me at (202) 208-4252.

Attachment



United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, D.C. 20240

JAN 12 1998

AUDIT REPORT

Memorandum

To: Assistant Secretary for Indian Affairs

From: Robert J. Williams *Robert J. Williams*
Assistant Inspector General for Audits

Subject: Audit Report on the Safety of Dams Project Constructed by the Bureau of Reclamation at Coolidge Dam

INTRODUCTION

This report presents the results of our review of the Bureau of Reclamation's costs associated with the construction of the Coolidge Dam safety of dams project. The audit was initiated in response to an August 4, 1995, request by the Deputy Commissioner of Indian Affairs to determine whether project costs were reasonable. In the audit request, the Deputy Commissioner stated that because of the increased amount of **noncontract**¹ costs for the project, the Bureau would have to justify to project beneficiaries the rate increases necessary to recover costs "far in excess of original projections" and that the financial impact to the project users "may be devastating."

BACKGROUND

Coolidge Dam, located on the Gila River approximately 115 miles southeast of Phoenix, Arizona, is owned and operated by the Bureau of Indian Affairs (Figure 1).

¹The Bureau of Reclamation used the terminology "contract" and "noncontract" to explain its construction program to the Congress. According to the Bureau, contract costs related to major construction contracts and noncontract costs for the Coolidge Dam safety of dams project were for: (1) preconstruction activities such as geologic investigations, drilling, architectural and engineering design specifications, and analyses; (2) construction supervision activities, including management, inspection, surveys, and contract administration; (3) small contracts; (4) flood operations; (5) tribal land use permit fees; and (6) supplemental analyses associated with the 1988 modification report.

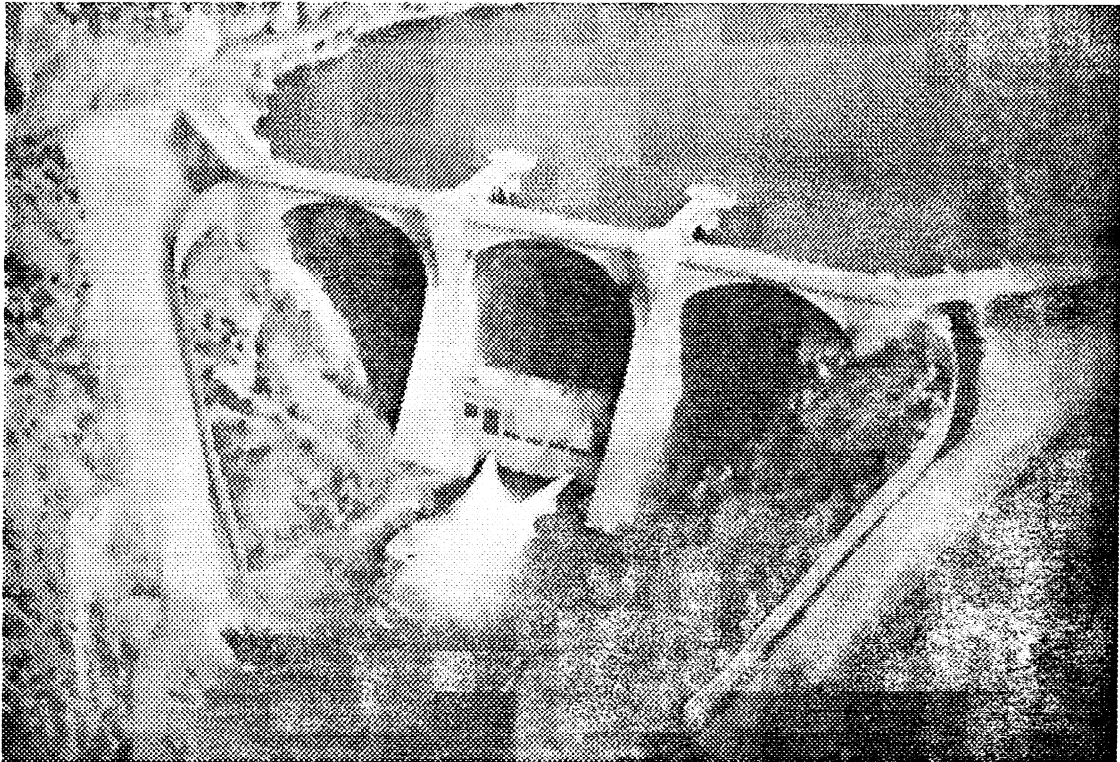


Figure 1. Coolidge Dam before safety of dams modifications. (Bureau of Reclamation photograph)

The Bureau of Indian Affairs completed Coolidge Dam in 1931 under the authority of the San Carlos Act of 1924 (43 Stat. 475476). The Dam is the primary water storage facility for the Bureau's San Carlos Irrigation Project, providing irrigation water for 50,000 acres of Indian land on the Gila River Indian Reservation and 50,000 acres of private land in the San Carlos Irrigation and Drainage District. In 1984, the Bureau of Reclamation updated information on the safety of dams, and its reports indicated serious safety deficiencies in the Dam's foundation that could cause the failure of the Dam during certain flood and seismic events. The Bureau of Indian Affairs requested the assistance of the Bureau of Reclamation to design and construct the necessary measures to correct the safety deficiencies. The Congress specifically authorized safety modifications for Coolidge Dam in a 1984 amendment (Public Law 98-404) to the Reclamation Safety of Dams Act of 1978 (Public Law 95-578). The 1984 amendment authorized additional appropriations of \$650 million for the Safety of Dams program and identified the Coolidge Dam project and a number of other projects to be undertaken. The Act required project beneficiaries to repay 15 percent of the safety of dams modification costs. The Act also required irrigation water users to repay, without interest, their allocated portion of project costs based on their ability to pay, not to exceed a 50-year period, and authorized the Secretary to negotiate appropriate repayment contracts with project beneficiaries.²

²The irrigators' ability to pay consists of the amount that irrigators can afford to pay for water service as determined by farm budget analyses, which compare the income derived from the sale of crops with the cost of producing the crops, along with a reasonable return to the farmer.

On November 10, 1988, the Bureau of Reclamation completed the "Coolidge Dam, Safety of Dams, Modification Report." The report concluded that Coolidge Dam needed structural modifications to prevent failure and the subsequent loss of life and property that could occur under normal operating conditions or during a flood or earthquake.³ The report identified safety deficiencies, including dam abutment and buttress instability and abutment erosion during floods in which water would flow over the top of the Dam. The Bureau of Reclamation's 1988 estimated cost of the recommended modifications was \$43.3 million, which included \$10 million for engineering, administration, and overhead. In addition to structural modifications, the report recommended: (1) installation of an early warning system to alert people downstream of a potential dam failure and (2) operation of the system until the structural modifications could be completed. However, the report did not estimate the additional costs for these interim safety measures.

In July 1990, the Acting Assistant Secretary for Indian Affairs authorized the Area Director of the Bureau of Indian Affairs Phoenix Area Office, with the assistance of the Bureau of Reclamation, to negotiate and execute a repayment contract with the San Carlos Irrigation and Drainage District for its share, 7.5 percent, of the safety of dams modification costs to Coolidge Dam.⁴ The Assistant Secretary required the form and terms of the repayment contract to generally follow the Bureau of Reclamation's contract repayment guideline except that the repayment period was not to exceed 10 years unless prior approval from the Assistant Secretary was obtained allowing for a longer period.

Reclamation guidelines require a signed repayment contract before construction of a project can proceed. However, in February 1991, the Assistant Secretary for Indian Affairs approved the Phoenix Area Director's request to waive the requirement for a signed repayment contract before proceeding with construction on the Coolidge Dam project. In an October 10, 1991, memorandum to the Regional Director of the Bureau of Reclamation's Lower Colorado Regional Office, the Phoenix Office Field Solicitor concluded that a waiver could be justified for the project because: (1) immediate repairs were necessary to protect public safety; (2) only 7.5 percent of the construction costs would be reimbursable under the repayment contract; and (3) execution of a repayment contract was expected in the near future.

Construction of the Coolidge Dam project began in June 1991, when the Bureau of Reclamation awarded a contract to construct a new access road to the work site at the downstream base of the Dam. In February 1992, the Deputy Commissioner of Indian Affairs, to enhance contract negotiations with the District, waived the earlier stipulation that limited the repayment period to 10 years or less. In June 1992, the primary construction contract for

³The 1988 "Coolidge Dam, Safety of Dams, Modification Report" stated: "The probable maximum flood (PMF) is defined as the maximum runoff condition that would result from the most severe combination of hydrologic and meteorologic conditions that are considered reasonably possible for a particular drainage basin. For Coolidge Dam the PMF was defined as having a peak flow of 800,000 [cubic feet per second] and a 17-day volume of 2,754,000 acre-feet."

⁴Public Law 98-404 requires project beneficiaries to repay 15 percent of the safety of dams modification costs. The San Carlos Irrigation and Drainage District has a 50 percent interest in project water. Therefore, the District's repayment share is 7.5 percent (50 percent times 15 percent) of the total modification costs.

the safety modifications was awarded, and modification work on the Dam was substantially completed in February 1995. As of September 30, 1995, the cost of the project totaled \$46.9 million, and as of October 1996, a repayment contract had not been negotiated with the District.

SCOPE OF AUDIT

We conducted our audit from May through October 1996 at the Bureau of Reclamation's Lower Colorado Regional Office in Boulder City, Nevada, and at its Area Office in Phoenix, Arizona. To accomplish our audit objective, we reviewed applicable laws, planning documents, correspondence, and construction cost data from the Bureau's financial reports concerning the safety of dams project at Coolidge Dam. We analyzed the history of cost increases from when costs were first incurred in fiscal year 1987 to the end of fiscal year 1995 (September 30, 1995) and compared the relative percentage of noncontract costs for this project with percentages of noncontract costs for other recent Bureau safety of dams projects. We also interviewed officials at the Bureau of Reclamation's Lower Colorado Regional Office, Phoenix Area Office, and Denver Service Center and at the Bureau of Indian Affairs Phoenix Area Office to discuss project design, planning, construction, changes in the scope of work, variances between contract and noncontract costs, and comparison of costs and scope of work of other safety of dams projects. Our review was conducted without the benefit of a technical evaluation of the efficiency and effectiveness of the safety of dams project constructed by the Bureau of Reclamation at Coolidge Dam.

Our audit was conducted in accordance with the "Government Auditing Standards," issued by the Comptroller General of the United States. Accordingly, we included such tests of records and other auditing procedures that were considered necessary under the circumstances. We limited our review of internal controls to the extent necessary to satisfy the audit objective. We also reviewed the Secretary's Annual Statement and Report to the President and the Congress, which is required by the Federal Managers' Financial Integrity Act of 1982, for fiscal years 1994 and 1995 and determined that none of the reported weaknesses were directly related to the objective and scope of our audit.

PRIOR AUDIT COVERAGE

Neither the Office of Inspector General nor the General Accounting Office has performed an audit of the Bureau of Reclamation's safety of dams project at Coolidge Dam during the past 5 years. However, the Office of Inspector General has issued four reports related to the Bureau of Reclamation's cost accounting process as follows:

- Three audits of the Bureau of Reclamation's financial statements for fiscal years 1992 through 1995 determined that the Bureau's internal control structure was generally sufficient to ensure that costs were properly recorded, processed, and summarized.⁵

- "Working Capital Fund, Bureau of Reclamation" (No. 96-I-644) issued in March 1996, stated that the Bureau did not have adequate controls to monitor and enforce cost recovery for the working capital fund. As a result, according to the report, the Bureau undercharged customers for the capital cost component of the fund and overcharged customers for the operational cost component of the fund. The report further stated that certain Bureau offices used funds derived from operational overcharges to subsidize activities that were not fund related. The report contained seven recommendations to improve controls and to help ensure that the Bureau operated the fund in compliance with applicable laws and regulations. Based on the Bureau's response to the draft report, we considered four recommendations resolved but not implemented and the remaining three recommendations unresolved. During our audit of the Coolidge Dam safety of dams project, we reviewed the audit work performed on the working capital fund and concluded that the weaknesses identified would not have resulted in unreasonable charges to the Coolidge Dam project.

RESULTS OF AUDIT

Overall, we concluded that Bureau of Reclamation costs associated with the Coolidge Dam safety of dams project were reasonable. Specifically, we found that: (1) the overall increase in project costs was less than what would have been expected if the Bureau had constructed all of the modification work proposed in the 1988 modification report; (2) the percentage of noncontract costs for this project was similar to the rates of noncontract costs for five other safety of dams projects constructed by the Bureau; (3) the Bureau incurred noncontract costs of \$3.5 million for necessary activities that were not either included or anticipated in the 1988 cost estimates; and (4) the increased percentage of noncontract costs was largely a result of post-1988 investigations by the Bureau of Reclamation, which significantly reduced the scope and cost of modification work performed under the construction contracts. In addition, we do not believe that requiring project users to pay the \$270,000 repayment increase between the actual cost of the project (\$3,517,500) and the 1988 cost estimate (\$3,247,500) would cause significant additional financial impacts beyond those anticipated in 1988. Further, we estimated that the delay by the Bureau of Indian Affairs in establishing a repayment contract with the project users resulted in a fiscal year 1996 loss to the Federal Government of at least \$175,000.

⁵ The reports consisted of the following: "Bureau of Reclamation Financial Statements for Fiscal Years 1992 and 1993" (No. 94-I-1055), issued in July 1994; "Bureau of Reclamation Financial Statements for Fiscal Years 1993 and 1994" (No. 95-I-547), issued in February 1995; and "Bureau of Reclamation Financial Statements for Fiscal Years 1994 and 1995" (No. 96-I-635), issued in March 1996.

Inflationary Impacts on the 1988 Project Cost Estimate

While the percentage of noncontract project costs increased significantly on the Coolidge Dam project, we found that the increase in total project costs was less than what would have been expected if the Bureau of Reclamation had constructed all of the work proposed in the 1988 modification report. We noted that the project costs of \$46.9 million as of September 30, 1995, were 8.3 percent (\$3.6 million) higher than the 1988 estimate of \$43.3 million for the project. However, during this period, the Bureau's construction costs increased by an average of 23.2 percent.⁶ By applying the Bureau's average construction cost increase to the 1988 project cost estimate, we determined that the estimated cost of the modification work envisioned in the modification report in 1995 dollars would be approximately \$53.3 million, as shown in Figure 2.

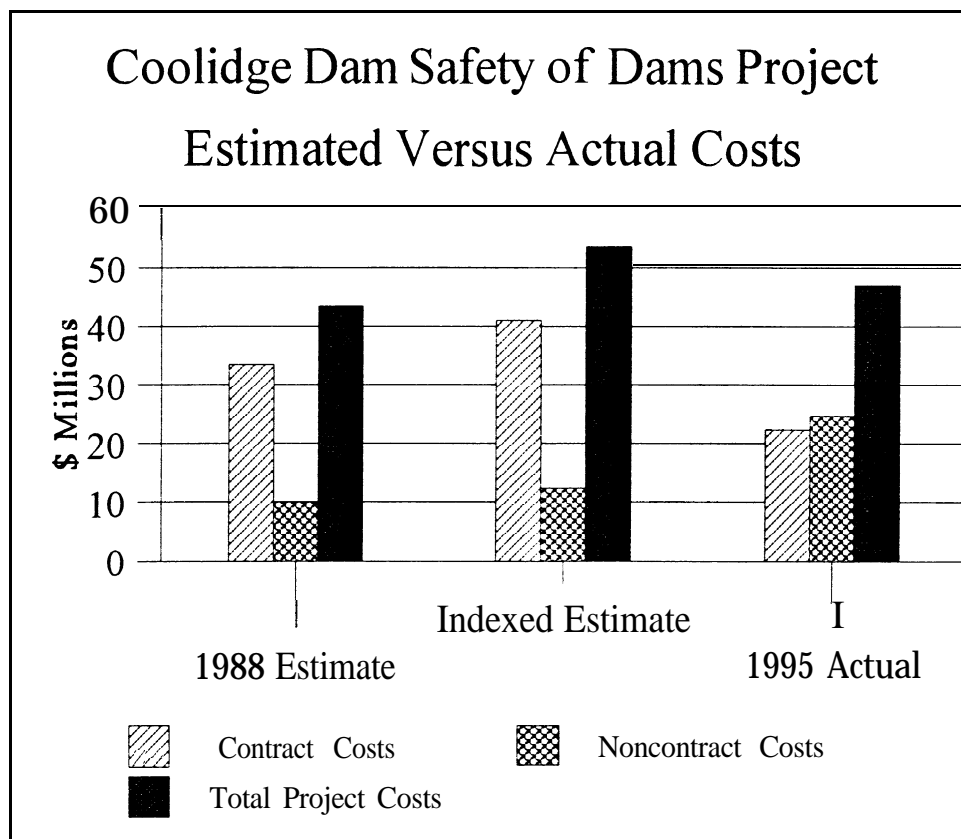


Figure 2. Estimated versus actual costs.

As such, we believe that the Bureau's additional investigative and design efforts, while increasing significantly the project's noncontract cost percentage, resulted in an overall reduction in the cost of the project.

⁶The average increase in Bureau construction costs was computed using the Bureau's composite trend construction index values as of October 1988 and October 1995.

Comparison With Other Reclamation Safety of Dams Projects

To determine the reasonableness of noncontract costs for the safety of dams project at Coolidge Dam in relation to other safety of dams projects, we reviewed noncontract costs for five Bureau of Reclamation safety of dams projects that were under construction as of September 1995: Ochoco in Oregon, Rye Patch in Nevada, Bumping Lake in Washington, and Bartlett and Horseshoe in Arizona.⁷ The total costs for the five projects ranged from \$6 million to \$28 million.

We determined that while the relative percentage of noncontract costs of the safety of dams project at Coolidge Dam was significantly greater than what was estimated in 1988, the percentage was similar to the percentages for the five projects we reviewed. Specifically, we calculated noncontract cost ratios of from 41.1 percent to 59.6 percent for the five projects, as shown in Figure 3. The weighted average percentage for noncontract costs for all five projects was 50.1 percent, which approximates the 51.2 percent of noncontract costs for the Coolidge Dam project.

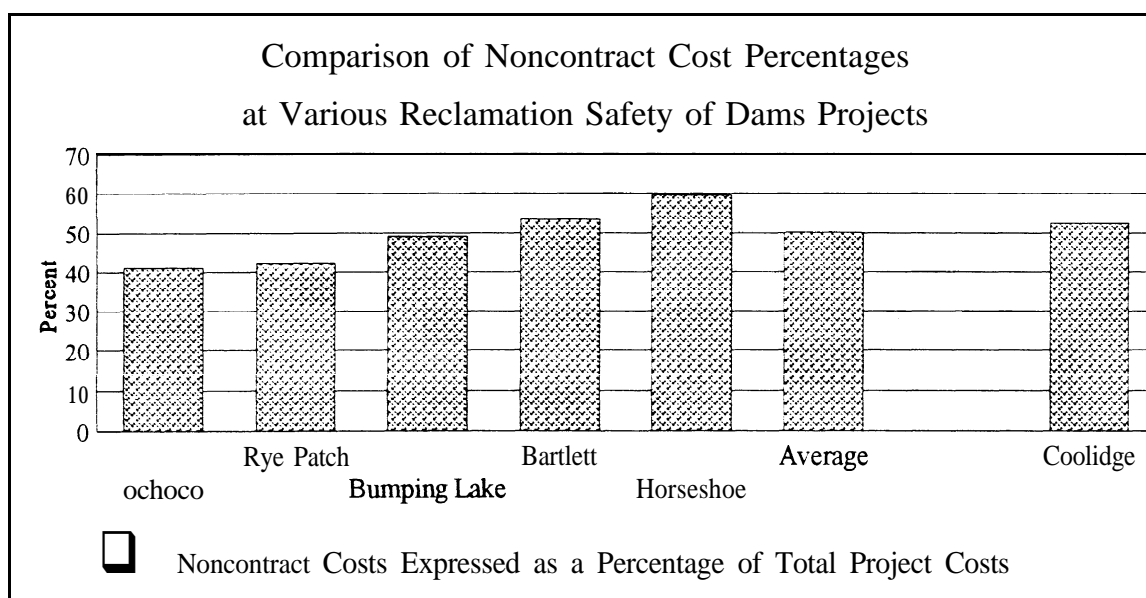


Figure 3. Comparison of noncontract cost percentages.

Additional Noncontract Costs

We also identified noncontract costs of at least \$3.5 million associated with activities that were not included in the 1988 cost estimate. Specifically, the Bureau of Reclamation incurred

⁷The first three projects were identified by Bureau of Reclamation safety of dams program officials as recent projects, and the remaining two projects were selected because the projects were administered by the same regional and area offices as was the Coolidge Dam project.

noncontract costs of \$1.5 million for the design, construction, and operation of an early warning system to alert people downstream of a potential dam failure (the modification report recommended installing this system; however, it did not estimate the system's cost); \$1.3 million for the design of a new access road to the work site; and \$717,000 for unanticipated flood operations resulting from severe and prolonged flooding of the work site during 1993.

Changes in Project Scope

We determined that the shifting of costs between the contract and the noncontract cost categories of the project during the period of 1988 to 1995 resulted principally from post-modification report investigations, which greatly reduced the scope of modification work performed under the construction contracts. While these investigations decreased contract costs by \$10.4 million, they increased noncontract costs by \$14 million from the Bureau's 1988 project cost estimate. Overall, the project's actual costs of \$46.9 million resulted in a \$3.6 million (8.3 percent) net increase over the 1988 cost estimate of \$43.3 million, although the mix of contract and noncontract costs varied significantly as follows:

	Project Costs		
	(In millions)		
	1988 (Estimated)	1995 (Actual)	Difference (Actual less estimated)
Contract Costs	\$33.3	\$22.9	(\$10.4)
Noncontract Costs	<u>10.0</u>	<u>24.0</u>	<u>14.0*</u>
Total	<u>\$43.3</u>	<u>\$46.9</u>	<u>\$3.6</u>

*At least \$3.5 million (25 percent) of the difference was for added noncontract cost activities that were not included or anticipated in the 1988 cost estimate.

On a percentage basis, noncontract costs increased from 23.1 to 51.2 percent, while contract costs decreased from 76.9 to 48.8 percent. The variations in the relative percentages of noncontract and contract project costs from the 1988 estimated to the 1995 actual costs are illustrated in Figure 4.

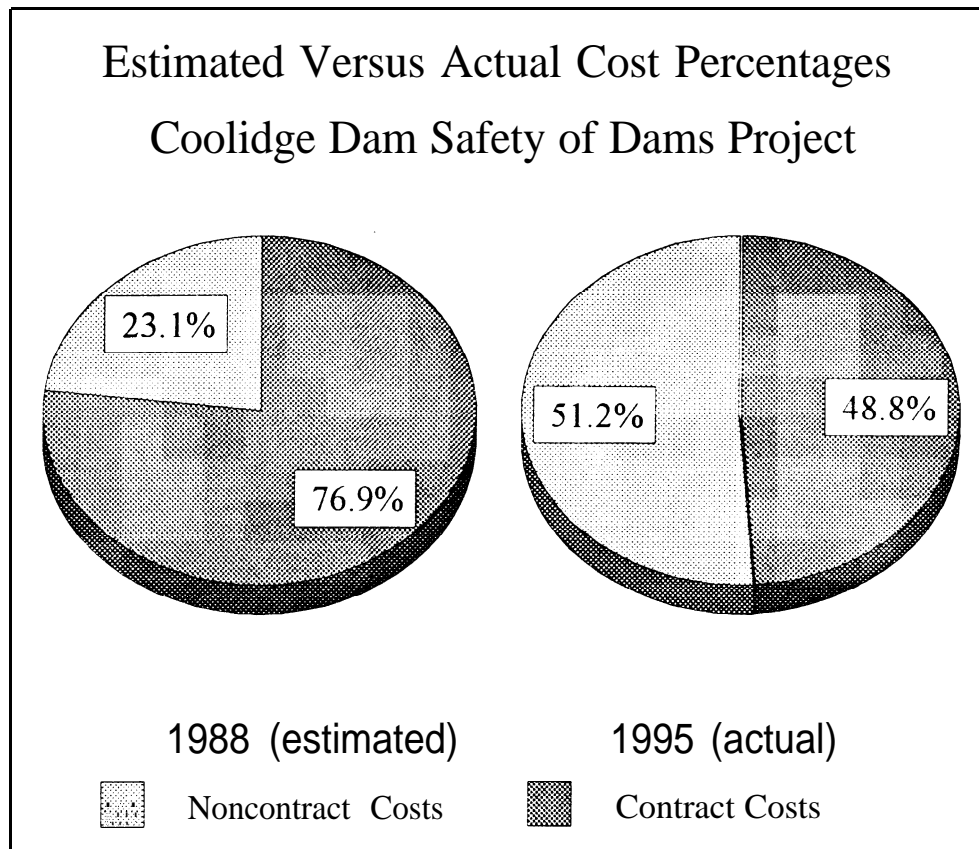


Figure 4. Estimated versus actual noncontract and contract cost percentages for the project.

In a December 8, 1994, memorandum to the Area Director of the Bureau of Indian Affairs Phoenix Area Office, the Area Manager of the Bureau of Reclamation's Phoenix Area Office stated that the Bureau of Reclamation's additional planning, investigative, and design efforts had significantly reduced the scope of modification work performed under the construction contracts. To substantiate this statement, we verified that the Bureau of Reclamation had incurred noncontract costs of approximately \$9 million for design data collection and design and specification activities during 1989 through 1992, which coincided with the period between the completion of the Coolidge Dam modification report (November 1988) and the award of the primary construction contract (June 1992). We also verified that the actual scope of modification work performed was less than what was anticipated in 1988 while, according to the Bureau, still fully addressing the dam safety issues.

In addition, we verified that the actual construction costs were significantly less than those estimated. The two most important changes involved reductions in the amount of construction work required for dam abutment stabilization and spillway modifications as follows:

- To stabilize the foundation of the Dam, the 1988 modification report proposed the installation of cables in both the left and the right dam abutments to provide additional support for unstable rock beneath the Dam's left and right buttresses. However, after additional

geologic investigations, the Bureau's final design eliminated the proposed foundation stabilization work on the right abutment and, to buttress the left abutment, included a reinforced concrete wall, which was constructed.

- The modification report proposed replacing the existing spillways with new reinforced concrete spillways approximately 2 feet thick, widened from 60 to 100 feet, and straightened slightly. As contemplated in the modification report, the wider and straighter spillways would have accommodated increased water flows of up to 200,000 cubic feet per second. However, the Bureau's final designs did not include plans for replacing, straightening, or widening the spillways because Bureau studies found that the increased spillway capacity would not be adequate to pass enough water during the probable maximum flood event to prevent water from overtopping the dam and eroding the Dam's foundation. Instead, the Bureau's design provided for stabilizing the Dam's foundation and controlling erosion to safely pass water over the Dam. Accordingly, the Bureau placed a thinner reinforced concrete overlay over the existing spillways, which retained the spillways' existing capacity for accommodating water flows of 120,000 cubic feet per second (Figure 5). This overlay allowed for the redesign of the spillways' water flow surfaces and included the addition of ramps in the floor and side walls of the spillways to dissipate the energy of water flow to reduce the potential for destruction of the spillways.

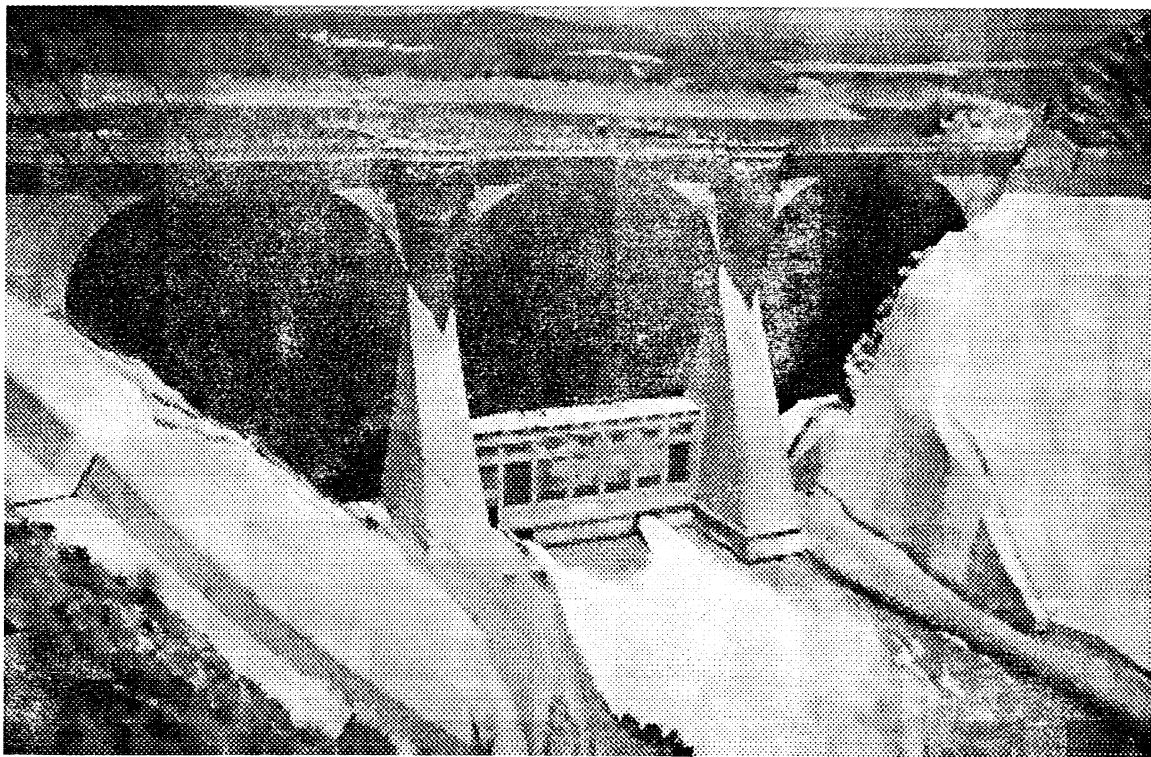


Figure 5. Coolidge Dam after safety of dams modifications. (Bureau of Reclamation photograph)

Financial Impact on Project Users

In the August 4, 1995, audit request, the Deputy Commissioner of Indian Affairs stated that beneficiaries of the Coolidge Dam project would experience “devastating” financial impacts because of rate increases required to repay project costs “far in excess of original projections.” Based on the 1988 modification report’s project cost estimate, the District’s repayment obligation would have been \$3,247,500 (7.5 percent of \$43.3 million), while the District’s repayment obligation is \$3,517,500 (7.5 percent of \$46.9 million) based on actual costs incurred through the end of fiscal year 1995. The \$270,000 increase in the District’s repayment obligation represents a total increase of about \$5.40 for each acre of private land irrigated by the District.⁸ In addition, the time allowed for repayment will be negotiated based on the District’s ability to pay but may be in excess of the 10 years initially required by the Bureau of Indian Affairs. While our review did not include an analysis of the District’s financial condition or its ability to repay the costs of the safety of dams modifications, we believe that the financial impact of the additional \$270,000 repayment obligation over the repayment period would be minimal.

Financial Impact on Federal Government

We found that because the Bureau did not obtain a repayment commitment from the District before the project was completed in February 1995, repayment of the \$3.5 million of project costs attributable to the District (non-Indian irrigation beneficiaries) did not begin in 1996. We estimated that the cost to the Federal Government of delaying the start of repayment for 1 year was approximately \$175,000, assuming an annual interest rate of 8 percent on the District’s \$3.5 million repayment obligation. Our estimate represents the difference between the present value of the \$3.5 million repayment obligation based on a 10-year stream of payments beginning in 1996 (\$2,360,000) and an identical stream of payments beginning in 1997 (\$2,185,000).⁹ We also estimated that further delays to 1998 would cost the Government an additional \$162,000 and that additional losses would accumulate for each additional year that repayment is delayed. Accordingly, we believe that the Assistant Secretary for Indian Affairs should facilitate the conclusion of the repayment contract negotiations with the District to minimize financial impact on the Government.

⁸The District’s repayment obligation would have been \$64.95 per acre (\$3,247,000 divided by 50,000 acres of private land irrigated in the San Carlos Irrigation and Drainage District) under the 1988 cost estimate and is \$70.35 per acre under the actual costs incurred, an increase of \$5.40 per acre.

⁹Present value is a financial term that refers to the time value of money, which recognizes that a dollar available in the future is worth less than a dollar available today, since money can be invested. Therefore, in discounting a future stream of revenues, prevailing interest rates provide the basis for converting future amounts into today’s dollar equivalents. For example, assuming an interest rate of 8 percent, \$1 due in 10 years is worth only \$0.46 today.

Bureau of Reclamation and Bureau of Indian Affairs Responses and Office of Inspector General Reply

Although this report contained no recommendations, we provided draft copies of the report to the Bureau of Reclamation and the Bureau of Indian Affairs for their comments. On June 23, 1997, the Bureau of Reclamation's Audit Liaison Officer responded that the Bureau of Reclamation concurred with the results of our audit. In the July 24, 1997, response (Appendix) from the Assistant Secretary for Indian Affairs, the Bureau of Indian Affairs stated, "While we agree [the Bureau of] Reclamation used the funds for the project, we continue to have serious concerns about whether all of the nonconstruction costs associated with the project were reasonable, applicable to the project, and reimbursable under the terms of the Reclamation Safety of Dams Act Amendments of 1984." In that regard, the Bureau of Indian Affairs questioned the efficiency of Bureau of Reclamation project management, stating that the Bureau of Reclamation's nonconstruction costs of 175 percent of construction costs as of September 30, 1995, were "4.4 times higher than the industry norm for similar public works projects [40 percent], even though there was nothing unusually difficult or complicated about the project. " The Bureau of Indian Affairs further stated that it believes that costs incurred by the Bureau of Reclamation for flood operations (\$726,895), access road repairs (\$4.98 million), early warning system installation (\$1.6 million), and Bureau of Reclamation stand-by costs (no amount cited) were not eligible for reimbursement under the Act. In addition, the Bureau of Indian Affairs stated that the San Carlos Irrigation and Drainage District has not submitted the repayment agreement to its membership "pending the determination of final project costs. "

In response to the Bureau of Indian Affairs request for audit, we determined that the costs incurred by the Bureau of Reclamation for safety of dams work on the Coolidge Dam were reasonable in relation to original cost estimates and similar projects. That notwithstanding, the Bureau of Indian Affairs, in its response, questioned the efficiency of the Bureau of Reclamation's operations by citing high noncontract costs, which the Bureau of Indian Affairs equated with project overhead, and the eligibility for reimbursement of the costs of certain other activities under the Act. Regarding the efficiency of the project management, all of our audits of costs proposed or claimed by construction contractors are subject to a technical evaluation as noted in the qualification contained in the Scope of Audit section of this report, which states that "our review was conducted without the benefit of a technical evaluation of the efficiency and effectiveness of the safety of dams project constructed by the Bureau of Reclamation at Coolidge Dam." Therefore, we cannot answer technical questions concerning the efficiency of the costs incurred by the Bureau of Reclamation for project management. Furthermore, we explained to the Phoenix Area Office Director and the Phoenix Area Safety of Dams Coordinator, prior to the start of this audit, that the review would not evaluate the efficiency or effectiveness of the Bureau of Reclamation's safety of dams operations. Regarding the eligibility of project costs for reimbursement, the Bureau of Indian Affairs, in its response, cited costs of four activities that it believed did not meet the criteria for reimbursement contained in Public Law 98-404, the Safety of Dams Act Amendments of 1984. Whether certain costs qualify for reimbursement under Public Law 98-404 is a legal matter. The Bureau of Indian Affairs should address the issue of cost eligibility directly to the Office of the Solicitor.

During our review, we noted that on August 18, 1995, the Bureau of Reclamation responded to Bureau of Indian Affairs concerns that “Reclamation’s overhead is out of line” with other work the Bureau of Indian Affairs had contracted out to private engineering firms. The Bureau of Reclamation explained that its noncontract costs are not the same as a private firm’s overhead but that “Reclamation uses noncontract and contract terminology as a means of defining our program to Congress.” The Bureau of Reclamation stated, “Major contracts are listed as line items whereas many lesser contracts and costs are lumped as noncontract.” Specifically, the Bureau of Reclamation further stated that its noncontract costs included about \$9.2 million of direct project costs for construction supervision, drilling, small contracts and purchase orders, flood operations, modification reports, and land use permits and that if these costs were subtracted from noncontract costs and added to contract costs, its ratio of noncontract to contract costs would be 44 percent.

Work we performed during our current audit supports the Bureau of Reclamation’s statement that its ratio of adjusted noncontract to contract costs is not out of line with the private sector. The Bureau of Reclamation also provided to the Bureau of Indian Affairs: (1) further details on how noncontract costs were used and (2) a breakdown and explanation of its determination of reimbursable costs for repair of Coolidge Dam. However, the Bureau of Indian Affairs continued to express concerns about these costs. Because we believe that the concerns expressed in the response are technical and legal issues, we suggest that the Bureau of Indian Affairs seek further clarification and justification from the Bureau of Reclamation about the nature of project costs and the efficiency of project operations and address its questions about the eligibility of costs for funding under the Reclamation Safety of Dams Act Amendments of 1984 to the Office of the Solicitor.

The legislation, as amended, creating the Office of Inspector General requires semiannual reporting to the Congress on all audit reports issued, the monetary impact of audit findings, actions taken to implement audit recommendations, and identification of each significant recommendation on which corrective action has not been taken.

We appreciate the assistance of Bureau of Reclamation and Bureau of Indian Affairs personnel in the conduct of our audit.



United States Department of the Interior

OFFICE OF THE SECRETARY

Washington, D.C. 20240

JUL 24 1997

Memorandum

To: Assistant Inspector General for Audits

From: Assistant Secretary - Indian Affairs

Adm E. Dec 1

Subject: Preliminary Final Audit Report, "Safety of Dams Project Constructed by the Bureau of Reclamation at Coolidge Dam," (Assignment No. W-IN-BOR-006-96)

The subject audit report reviewed the Bureau of Reclamation's (Reclamation) costs associated with the construction of the Coolidge Dam safety of dams project. The Coolidge Dam is operated and maintained by the Bureau of Indian Affairs (Bureau). We appreciate this opportunity to offer the following comments on the report.

The report concludes that Reclamation's costs associated with the project were reasonable. This conclusion was based on an analysis of financial reports and of contract and noncontract costs for this project and other Reclamation projects and not on an audit of project costs incurred by Reclamation. While we agree Reclamation used the funds for the project, we continue to have serious concerns about whether all of the nonconstruction costs associated with the project were reasonable, applicable to the project, and reimbursable under the terms of the *Reclamation Safety of Dams Act Amendments of 1984*. Two common complaints among Reclamation's clients are the amount of organizational overhead charged to their projects, and Reclamation's tendency to overstaff many project related functions. Such was the case in our opinion with the Coolidge Dam safety of dams project--high overhead and overstaffing.

Coolidge Dam was designed and constructed by the United States Indian Irrigation Service as a feature of the Bureau of Indian Affairs San Carlos Irrigation Project under the authority of the *San Carlos Act of 1924* (43 Stat. 475-476). Since its completion in 1931, the dam has been operated and maintained by the San Carlos Irrigation Project and has provided a continuous source of irrigation water for 50,000 acres of Indian land on the Gila River Indian Reservation and 50,000 acres of private land in the San Carlos Irrigation and Drainage District (District), both in Pinal County, Arizona.

Reclamation's involvement in the Coolidge Dam safety of dams project was mandated by the *Reclamation Safety of Dams Act Amendments of 1984* (Public Law 98-404). Coolidge Dam was the only non-Reclamation dam covered by the Act and subject to the repayment requirements contained therein. In 1994, the Congress passed the *Indian Dams Safety Act of 1994* (Public Law 103-302), which established the framework and general guidelines for the Bureau's Safety of Dams Program.

The Act stated that any funds appropriated as a result of this Act were to be “nonreimbursable.” As a result, Coolidge Dam is the only Bureau dam to have a repayment obligation associated with safety of dams repairs and modifications. This fact has not been lost on the Indian and non-Indian recipients of Coolidge Dam irrigation water. In addition, the water users consider the obligation extremely overpriced.

In negotiating the repayment contract with the District, the District’s negotiators requested an accounting or breakdown of project costs before finalizing the terms of the contract. This request was forwarded to Reclamation’s Lower Colorado Regional Director in a memorandum **from** the Bureau’s Phoenix Area Director dated August 12, 1994.

Reclamation’s Arizona Projects **Office** provided the cost breakdown on December 8, 1994. Upon reviewing that data, the Bureau found Reclamation’s breakdown and explanation of costs to be very confusing and was astounded by the magnitude of some of Reclamation’s charges. For instance, Reclamation’s Phoenix, Tucson, and Boulder City Offices charged \$5.8 million to the project under the generic heading “Prime Contract” plus an additional \$6.4 million to the project for “Construction Management.” In addition, the Denver **Office** charged \$4 million presumably for design services. These charges, which totaled \$16.2 **million**, were for a prime construction contract that totaled only \$12.4 million (a 130% nonconstruction to construction cost ratio).

Before forwarding the cost breakdown to the District, the Bureau requested a meeting with Reclamation’s Lower Colorado Regional Director to discuss the Bureau’s concerns over project costs. During the resultant meeting on January 26, 1995, it became apparent that Reclamation was neither interested in answering the Bureau’s questions nor addressing its concerns over project costs. It also became apparent that Reclamation had made little effort to control costs on the Coolidge Dam project.

When subsequent discussions between the Bureau and Reclamation failed to produce any positive results, the Bureau decided to request the audit **from** your office. Our primary purpose in requesting the audit was to determine whether the costs were reasonable, applicable to the project, and reimbursable under the terms of Public Law 98-404. We agree that Reclamation used the funds on the project. However, we believe that the amount of funds to be repaid should be reasonable and in accordance with the terms of the Act. If not, the costs included in the repayment contract should be subject to adjustment or negotiation.

Reimbursability of Project Costs. Public Law 98-404 requires reimbursement of only those costs “incurred in the modification of structures under this Act, the cause of which results **from** new hydrologic or seismic data or changes in state-of-the-art criteria deemed necessary for safety purposes.” The Bureau believes that some of the costs incurred by Reclamation on the project do not meet this criteria and should, therefore, not be included in the repayment contract. These costs include the following:

Flood operations. Reclamation incurred \$726,895 to monitor watershed conditions and reservoir inflow, to predict spillway discharge, and to issue status reports to downstream jurisdictions during the 1993 floods. While this was a valuable service provided to downstream

residents by Reclamation, it was strictly voluntary. The costs had nothing to do with the safety of dams modifications and should, therefore, not be included in the repayment contract.

Access road repairs. Reclamation built a temporary gravel road at a cost of \$4.98 million (\$3.79 million construction contract plus \$1.19 million in Reclamation charges) to provide access for construction equipment and materials to the dam site during the project. The temporary road was damaged during the 1993 floods. While the water users are responsible for repaying the original cost of constructing the road, the Bureau believes that the water users should not be required to repay the \$233,000 cost of repairing the damage to the road caused by an act of nature. It should be noted that the construction contract for repairing the road was \$260,000 and Reclamation's charge for overseeing the repairs was \$103,000. The Bureau has already reimbursed Reclamation \$130,000 from the Bureau flood repair and mitigation funds; thus, the \$233,000 cost.

Early warning system. Prior to initiating work on the project, Reclamation recommended and the Bureau agreed that certain interim measures should be undertaken to ensure the safety of downstream residents until the modifications could be completed. Among those measures were the restriction of reservoir levels, the initiation of around-the-clock monitoring of the dam by Bureau personnel, and the installation of an automated early warning system.

The Bureau transferred \$500,000 to Reclamation to design and install the early warning system, which was accomplished at a cost of \$1.6 million. The cost included nearly \$1.4 million in direct charges by Reclamation, including \$681,000 to oversee a private sector equipment installation contract totaling \$23 6,000.

In addition to our concerns as to whether the costs are reimbursable under the terms of Public Law 98-404, we also question the extremely high cost of Reclamation's involvement (especially the \$681,000 charge to oversee a \$236,000 contract) and the disposition of the \$500,000 initially provided by the Bureau.

Stand-by costs. Construction activities were suspended because of high reservoir levels and the flooding of the construction site at the base of the dam for approximately 3 months in 1993. During the period, Reclamation maintained a full complement of project personnel at the site. In the Bureau's opinion, the water users should not have to reimburse the Government for any portion of the cost of maintaining this crew in as much as they did not contribute to the completion of the project. The crew could have been furloughed or reassigned during that period, as were the contractor's employees.

Construction Efficiency Measurement. Most of the engineering and construction industry measures project management efficiency by comparing nonconstruction costs to construction costs. Construction costs are the costs of actually constructing a facility or structure and its appurtenances, and nonconstruction costs are site surveys and investigations; the preparation of designs, plans, specifications, and estimates; NEPA compliance and related environmental activities; contract administration and construction inspection and quality control; and any other activity not directly related to the physical construction of the facility. Reclamation, however, compares noncontract costs to contract costs. As used in this formula, either element **may** include either or both

construction and nonconstruction costs. Any contract less than \$200,000 is considered a noncontract cost.

While nonconstruction costs as a percentage of construction costs may vary according to type, size, difficulty, and remoteness of a project, a common project management goal on civil engineering public works projects is to hold nonconstruction costs to about 40 percent of construction costs. By way of comparison, the Federal Highway Administration has a **goal** of 27 percent for bridges and large highway construction projects, and the Bureau's Office of Facilities Management and Construction Center has a goal of 6 percent for architectural design and 20 percent for large building construction projects. No one we contacted has ever heard of a situation where nonconstruction costs in excess of 100 percent of construction costs were considered acceptable.

If the 40 percent rule-of-thumb were applied to the Coolidge Dam safety of dams project with construction costs of approximately \$17 million (including the construction access road), nonconstruction costs would be about \$6.8 million and total project costs would be about \$23.7 million. However as the audit report notes, **total** project costs had reached \$46.3 million by September 30, 1995. As of September 30, Reclamation's nonconstruction costs on the project were approximately \$29.9 million, or 175% of construction costs. This is 4.4 times higher than the industry norm for similar public works projects, even though there was nothing unusually difficult or complicated about the project.

Repayment Contract. The report states that a repayment contract had not been negotiated with the District. The basic agreement was reached on the repayment contract on February 22, 1992, when the Deputy Commissioner of Indian **Affairs**, acting on behalf of the Assistant Secretary - Indian Affairs approved the Phoenix Area Director's request to waive the lo-year payback stipulation. Since that time, the District has refused to submit the agreement to its membership for ratification pending the determination of final project costs, and verification of those costs by an independent audit. As of July 1, 1997, we still do not know what the final cost of the project. Although the Bureau accepted the completed project in January 1996, costs have continued to accrue.

If you have any questions regarding this issue, please contact Mr. Ken **Clouser**, Phoenix Area Safety of Dams Coordinator. Mr. Clouser was in travel status when the audit team visited the Area Office. Mr. Clouser's input and knowledge of the project would be most valuable to your office's understanding of the project history and of the Bureau's difficulties in obtaining an accounting of project costs from Reclamation. Mr. Clouser's telephone number is (602) 379-6956.

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